

Acc. Nr: **AP0037246**

Ref. Code: UR 0301

PRIMARY SOURCE: Voprosy Meditsinskoy Khimii, 1970, Vol 16,
Nr 1, pp 99-100

THE POSSIBLE MECHANISM OF THE INHIBITORY EFFECT OF BARBITURATES
ON OROTIC ACID BIOSYNTHESIS IN RAT LIVER SLICES

Fitsner, A. B.; Mardashev, S. R.

The Laboratory of Enzymology Institute of Biological and Medical Chemistry USSR
Academy of Medical Sciences, Moscow

The effect of FAD on inhibitory action of some barbiturates in enzymatic conversion of C¹⁴-DL-carbamoylaspartic acid into orotic acid in rat liver slices was studied in vitro. It was estimated that FAD at molar relation to labelled substrate as 1:2 prevents the inhibition of orotic acid biosynthesis induced by barbamy, nembutal or phenobarbital. It may be supposed that the mechanism of the inhibitory action of barbiturates on pyrimidine biosynthesis may be connected with their ability to form complexes with flavine coenzymes presented in dihydroorotate dehydrogenase.

D. n.

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REEL/FRAME
19730173

USSR

UDC 621.375.82

LOKHOV, YU. N., MOSPANOV, V. S., and FIVEYSKIY, YU. D.

"Optical Surface Strength of a Transparent Dielectric"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2(14), Moscow, "Sov. Radio," 1973, pp 71-74 (English summary) (from RZh-Fizika, No 10, Oct 73, Abstract No 10D897 from authors' abstract)

Translation: A dynamic theory is developed for the optical strength of a dielectric under the action of a nanosecond-long pulse. It is shown that an important role here is played by surface absorption, which makes the chief contribution to thermoelastic stresses as compared to striction and volume absorption. A mechanism is suggested for the destruction of the rear end face under the action of thermoelastic stresses. The power of the pulse that destroys the surface is calculated. Bibliography with 12 titles.

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USSR

UDC: 535.42

LOKHOV, Yu. N., MOSPANOV, V. S., FIVEYSKIY, Yu. D.

"Limiting Pulse Duration for Emission on the Second Harmonic in a KDP Crystal"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 103-105

Abstract: When the second harmonic is generated by a powerful short light pulse, heating of the nonlinear crystal takes place in the laser beam channel, disrupting conditions of synchronism. An expression is found for the specific power of heat sources in a laser beam channel beyond which the efficiency of the nonlinear process is appreciably reduced. It is this effect which limits the duration of a pulse for a given pulse power. It is shown that the specific power of heat sources must not exceed a generalized parameter defined in terms of the optical and elastic parameters of a nonlinear crystal. A quantitative estimate for a KDP crystal gave a value of 10 J/cm^2 for the generalized parameter. The authors thank V.G. Dmitriyev for interest in the work. Two illustrations, bibliography of two titles.

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USSR

UDC 621.375.82

LOKHOV, Yu. N., MOSPANOV, V. S., FIVEYSKIY, Yu. D.,

"Maximum Pulse Duration in the Generation of the Second Harmonic in a KDP Crystal"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No. 2, Moscow, "Sov. radio", 1972, pp 103-105 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D872)

Translation: Heating of a nonlinear crystal which leads to breakdown of synchronism conditions occurs in the channel of a laser beam in generating the second harmonic by a strong, short light pulse. An expression was obtained for the maximum power of heat sources in the channel of the laser beam which, if exceeded, considerably reduces the efficiency of the nonlinear process. This effect also limits its duration for a given pulse intensity. It is shown that the specific power of the heat sources need not exceed the value of the generalized parameter defined in terms of the optical and elastic parameters of the nonlinear crystal. A quantitative calculation made for the KDP crystal gave a value of the generalized parameter of 10 joule/cm^3 .
Authors abstract.

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USSR

KOPPE, V.T., KOVAL', A.G., ~~FIZGEYER, B.M.~~, FOGEL', Ya.M., IVANOV, S.I.,
Kharkov State University

"Measurement of the Effective Cross Sections and Excitation Functions for
Bands of the First Negative System of the N_2^+ Molecular Ion With the Excita-
tion of Nitrogen by Fast Electrons"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 12, 1970, pp
1878-1883

Abstract: The effective cross section for the (0-0), (0-1), (0-2), (0-3),
(1-2) (1-3), and (1-4) bands of the first negative system of the N_2^+ ion
and the multiplet lines $\lambda = 5001 - 5005 \text{ \AA}$ in the NII spectrum were measured at
energies between 0.5 and 20 kev. The nitrogen was excited by electrons
with energies between 0.5 and 20 kev. In the region of overlapping energies
the experimental effective cross sections are in good agreement with the data
of quoted sources. A formula is presented which satisfactorily describes
the course of the excitation functions of the bands and lines investigated
at energies between 0.8 and 20 kev. 3 figures, 1 table, 10 bibliographic
entries.

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1/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ENERGY DISTRIBUTION OF ELECTRONS FREED DURING COLLISIONS OF NE
PRIME3 POSITIVE WITH ARGON ATOMS -U-
AUTHOR--(03)-OGURTSOV, G.N., FLAKS, I.P., AVAKYAN, S.V.
COUNTRY OF INFO--USSR
SOURCE--ZH. TEKH. FIZ. 1970, 40(5), 1133-5
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRON-SPECTRUM, ION BOMBARDMENT, NEON, ARGON, ELECTRON
TRANSITION, EXCITATION CROSS SECTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3004/0934 STEP NO--UR/0057/70/040/005/1133/0035
CIRC ACCESSION NO--AP0131520
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131520

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. INVESTIGATIONS WERE CARRIED OUT ON THE ENERGY SPECTRUM OF ELECTRONS FREED DURING COLLISIONS OF NE PRIME3 POSITIVE WITH AR ATOMS. THE ENERGIES OF NE PRIME3 POSITIVE WERE 21 AND 45 KEV AND THE ELECTRON ENERGY WAS 5-16 EV. THE ANGLE BETWEEN THE ELECTRON PATH AND THE INCIDENT BEAM WAS 54.5 DEGREES. THE ELECTRON FORMATION CROSS SECTION CORRESPONDING TO THE CONTINUOUS PART OF THE SPECTRUM DEPENDS LITTLE ON THE RELATIVE VELOCITY OF MOTION. THE DISCRETE LINES OF THE OBSO. SPECTRUM CORRESPOND TO THE LINES DUE TO AUTOIONIZATION TRANSITIONS IN AR ATOMS AND IONS. CROSS SECTIONS CORRESPONDING TO THE CONTINUOUS PART OF THE SPECTRUM FOR COLLISIONS OF AR ATOMS WITH NE PRIME POSITIVE AND NE PRIME3 POSITIVE WERE COMPARED. IN THE LATTER CASE, THERE IS A SHARP RISE OF CROSS SECTION WITH DECREASE OF ELECTRON ENERGY. THE PROCESSES OF EXOTHERMIC CAPTURE WITH IONIZATION INFLUENCE THE MAGNITUDE AND CHARACTER OF THE DEPENDENCES OF THE CROSS SECTION ON THE ENERGY, E_{SUBE} , OF THE ELECTRONS. ALSO, THE ENERGY DISTRIBUTION OF ELECTRONS FREED IN THE PROCESS IS CONTINUOUS TO VERY SMALL VALUES OF E_{SUBE} . FACILITY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

1/2 036 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--RESONANCE CHARGE EXCHANGE IN A HE POSITIVE AND HE SYSTEM -U-
AUTHOR--(04)-LATYPOV, Z.Z., FEDORENKO, N.V., FLAKS, I.P., SHAPORENKO, A.A.
COUNTRY OF INFO--USSR
SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(3), 189-92
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, CHEMISTRY
TOPIC TAGS--ION BOMBARDMENT, HELIUM, ELECTRON RESONANCE, CHARGE EXCHANGE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1987/0780 STEP NO--UR/0386/70/011/003/0189/0192
CIRC ACCESSION NO--AP0104226
UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104226

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CROSS SECTION, DELTA, OF THE PROCESS HE POSITIVE PLUS HE YIELDS HE PLUS HE POSITIVE WAS MEASURED AT ENERGIES E EQUALS 150-3200 EV IN THE ASSEMBLY DESCRIBED BY PREVIOUSLY (LATYPOV, ET AL., 1968). FOR THE PROCESS, DELTA EQUALS F(E) IS AN OSCILLATING FUNCTION. THE DIFFERENCE BETWEEN EVEN AND ODD STATES DID NOT PASS THROUGH A MAX. OSCILLATIONS WERE EXPLAINED ON THE ASSUMPTION OF AN EFFECT OF SCATTERING OF PARTICLES IMPINGING ON THE HOST OF THE ATOM TARGET.

UNCLASSIFIED

SSR

UDC: 620.193.21

FLAKS, V. Ya.

"Statistical Model of Distribution of Pit Dimensions Following Atmospheric Corrosion of Aluminum Alloys"

Moscow, Zashchita Metallov, Vol 9, No 3, Jul-Aug 73, pp 443-446.

Abstract: Pitting corrosion, characteristic for aluminum alloys under atmospheric conditions, is probabilistic in nature. The author studied the distribution of dimensions of pits on the surface of aluminum alloys. The empirical histograms of natural values of pit dimensions have a clear left-sided asymmetry. The distribution is independent of alloy type, corrosive medium or changes in pit densities over rather broad limits (from 0.2 to 20 pits per square centimeter). The results of studies performed by the author indicate that the log-normal distribution is a likely statistical model describing the distribution of pit dimensions on the surface of aluminum alloys following exposure to the atmosphere.

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.1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70 /
TITLE--RESISTANCE OF ALUMINUM ALLOYS IN VARIOUS CORROSIVE MEDIA -U-

AUTHOR--(05)-BUDOV, G.M., GUZEYEV, E.A., YEFIMOV, I.A., SMETANINA, N.G.,
FLAKS, V.YA.
COUNTRY OF INFO--USSR

SOURCE--PROM. STROIT. 1970, (1), 40-2

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ALUMINUM ALLOY, ALUMINUM CORROSION, ALLOY DESIGNATION,
CHLORINE, HYDROGEN SULFIDE, CARBON DISULFIDE, INDUSTRIAL PLANT, SULFUR
OXIDE, OCEAN, ARCTIC TEST/(U)DIBT ALUMINUM ALLOY, (U)B95T1 ALUMINUM
ALLOY, (U)AK6T1 ALUMINUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/1298

STEP NO--UR/0227/70/000/001/0040/0042

CIRC ACCESSION NO--AP0055969

UNCLASSIFIED

.2/2 023

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055969

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CORROSION OF D16-T, B95-T1, AND
AK6-T1 AL ALLOYS (COMP. NOT GIVEN) WAS DETD. BY A 2 YR EXPOSURE ON THE
SHORE OF THE ARCTIC OCEAN AND AT INDUSTRIAL PLANTS. THE RESULTS ARE
GIVEN. THE LOSS STRENGTH WAS GREATER ON THE SHORE THAN AT THE PLANTS.
AT THE INDUSTRIAL PLANTS, CL BEARING ATMS. CAUSED GREATER CORROSION THAN
THOSE CONTG. SO SUB2, H SUB2 S, OR CS SUB2.

UNCLASSIFIED

USSR

UDC 621.311.22

SIVACHEV, K. A., Candidate of Technical Sciences, GODIN, I. B., Candidate of Technical Sciences, Neymark, B. A., Engineer, and ELAKSERMAN, G. Yu., Engineer, All-Union Institute of Heat Engineering imeni F. Ye. Dzerzhinskiy, Moscow Branch of All-Union State Institute for the Planning of Electrical Equipment for Heat Engineering Installations

"Topping Plant SKR-100 for 300 kgsec/cm² and 650°C at Kashirsk State Regional Electric Power Plant"

Moscow, Teploenergetika, No 6, Jun 73, pp 8-12

Abstract: The modernization project of Kashirsk State Regional Electric Power Plant, by means of installation of the preconnected SKR-100 topping plant with the 100-Mw turbine R-100-300 to the acting part of medium compression of the Power Plant, was carried out by the Moscow Branch of All-Union State Institute for the Planning of Electrical Equipment for Heat Engineering Installations. The principle outfit of the topping plant, its heating schema particulars, and the selection of steel brands for parts working at supercritical steam parameters are described:

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SIVACHEV, K. A., et al., Teploenergetika, No 6, Jun 73, pp 8-12

the chosen variant of boiler-turbine grouping and the flow sheet of the topping plant are shown. The main results of 60 operating periods in the years 1967-1971 of SKR-100 topping plant and of its individual blocks are discussed. Two figures, two tables.

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UDC 620.195

TOLSTAYA, M. A., ~~ELEGONTOVA, L. N.~~, and SERBINOVSKAYA, YE. L., Moscow
Aviation Technological Institute

"Electrochemical and Corrosion Behavior of SAP Metallooxide Composition in
Electrolyte Solutions"

Moscow, Zashchita Metallov, Vol 7, No 5, 1971, pp 540-546

Abstract: A study was made of the electrochemical and corrosion behavior of unclad SAP-1 in electrolyte solutions by comparing its behavior with that of pure AVCO Aluminum and AD1 technical grade aluminum in similar solutions. The test were made in artificial sea water, Moscow tapwater, distilled water, and in one- and two-component solutions of KNO_3 , Na_2SO_4 , and $NaCl$. In synthetic sea water at pH 7.9-8.0, the corrosion losses of SAP-1 are sharply reduced compared with the losses of AVCO and AD1 not only at ordinary temperature, but also at the boiling point. However, in sea water with artificially increased alkalinity (pH 9.8-10) the corrosion resistance of SAP-1 is harply reduced. In neutral solutions, with a concurrent content of passivating and activating anions, the stability of the passive state of the SAP-1 material during anodic polarization is higher than in pure (AVCO) and technical grade (AD1) aluminum. (The comparison grades of aluminum were chosen because these

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USSR

TOLSTAYA, M. A., et al., Zashchita Metallov, Vol 7, No 5, 1971, pp 540-546

materials are close to SAP-1 in chemical content, but differ sharply in structure.) It was suggested that the electrochemical and corrosion behavior of SAP-1 differs from the comparison metals because of its special distribution in the aluminum matrix of iron and silicon impurities, and also because of its content of γ - Al_2O_3 particles.

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USSR

UDC: 620.195

TOLSTAYA, M. A., FLEGONTOVA, L. N., and DMITRIYEV, Yu. V., Moscow Aviation Technological Institute

"Tendency of Clad SAP-1 (Sintered Aluminum Powder) to Crevice Corrosion"

Moscow, Zashchita Metallov, Vol 6, No 5, Sep-Oct 70, pp 565-569

Abstract: Cladding of SAP-1 sheets with aluminum alloys markedly increases their weldability during contact spot and roll welding. In this experiment the working media were 3.5% natural sea salt solutions (pH 7.9-8.0, $\text{Cl}^- \approx 0.55 \text{ n.}$) and salt solutions simulating sea water. The test materials were double spot-welded work pieces from SAP-1 sheets clad with commercial AD1 aluminum. Four months of sea water testing of double-spot welded test pieces revealed that the AD-1 aluminum cladding layer was affected by corrosion in the gaps between the welded sheet. The corrosion concentrated in the finest gaps. Some test pieces showed advanced crevice corrosion through the plastic zone without having affected the cast zone; the latter was confirmed by rupture testing of the spot welds.

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USSR

TOLSTAYA, M. A., et al, Zashchita Metallov, Vol 6, No 5 Sep-Oct 70,
pp 565-569

The propagation of crevice corrosion through the plastic zone might have been caused by the presence of micro-gaps due to low-quality welds of AD-1 layers. It is most probable that such micro-gaps are formed with the penetration of crevice corrosion through the plastic layer. It is concluded that commercial AD-1 aluminum, despite its good weldability and workability, is not well suited for cladding SAP-1. In this respect, pure AV000 aluminum and ANg-1 aluminum-magnesium alloys which act as anodic coatings for SAP-1 are more resistant to crevice corrosion and hold greater promise.

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USSR

UDC 621.372.057

GOLENISHCHEVA, V. A., FLEKSER, L. A.

"On a Method of Finding the Transfer Functions of Linear Electronic Circuits on a Computer"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 99-106

Abstract: The paper deals with a method of determining the transfer functions of linear electronic circuits on a computer. The procedure is based on using a "polynomial foreman" program. The method ensures determination of transfer functions of multijunction circuits on type M-20 computers (M-220, M-222, BESM-4) with two-place core store. Five tables, two illustrations, bibliography of six titles.

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USSR

UDC: 8.74

SAPRYKIN, V. I., FLEROV, A. I.

"Problem of Determination of Time Discretization Step"

Kibern. Tekhn. [Cybernetics Equipment--Collection of Works], Kiev, 1971, pp 270-277 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V549, by V. Mikheyev)

Translation: A method is suggested for conversion and reduction of redundancy of functions studied in the process of creation and transmission of information. The methods consider: 1) the method of conversion of a continuous function to a discrete signal, selection of the discretization step as to time and amplitude; 2) the type of restoration function, methods of determination of restoration and approximation function; 3) criteria for evaluation of the accuracy of approximation and restoration; 4) compactness of the algorithm of functioning of the continuous information system, reproduction and preliminary processing of information. Results are presented for conversion and reduction of redundancy of several functions using programs running on the "MIR" computer.

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Acc. Nr. 0041230

Ref. Code: UR 0209

USSR

UDC: None

FLEROV, G., Engineer-Lt. Col.

"Turbulence in the Trace"

Moscow, Aviatsiya i Kosmonavtika, No. 1, 70, pp 28-29

Abstract: A popular-level study of the turbulent trail in the wake of modern aircraft and its effects. Every aircraft in its flight leaves behind it a turbulent zone consisting of three components: eddies at the wing terminals, gas jets from the engines, and a turbulent current behind the fuselage. The first component possesses the highest energy. The energy of the second and third components is relatively low and is concentrated in a small space.

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AP0041290

This backwash can have a profound effect on the course of aircraft falling into it. For example, if a MIG-21 plane encounters the core of the eddies following a heavy aircraft like the TU-104, the trajectory of the former takes a sharp turn: the banking angular velocity reaches 90-100 degrees per second, the random bank angle velocity rises to 100-120 degrees per second, and the overload reaches 2.5. Especially dangerous are maneuvers in a vertical plane of the aircraft caught in the core of the eddy left by a leading ship; the first aircraft may reach the maximum permissible overload. There are, however, warning signs of an aircraft's approach to the core of the eddy trail: the aircraft begins a characteristic jolting, and a blue-white eddy is observed on the upper part of the wing. The author concludes with the warning that it is best to take the geometry of the aircraft afterwash into consideration when flying in tight battle formation.

19751125

USSR

UDC: 546.799:539.1.074.5

FLEROV, G. N., PERELYGIN, V. P., and OTGONSUREN, O.

"The Origin of Fission Fragment Traces in Lead Glass"

Moscow, Atomnaya Energiya, vol 33, No 6, 1972, Abstract, p 974

Translation: An investigation is made of the origin of fission fragment traces detected during the chemical etching of old lead glass. By using the method of recording rare events of nuclear fission, the authors established from the coincidence of the traces in two layers of polymer film that the effect observed earlier in two lead glass specimens is explained by the fission of the lead nuclei by cosmic radiation if it is assumed that these glasses are in containers covered with concrete no greater than 10 cm thick. The probability of the fission of the lead by these particles at sea level with no absorbers is found to be 15 ± 4 fissions per gram per year ($\lambda = 56^\circ$ N. Lat.).

Investigation of the sensitivity of the glass to heavy Ne^{22} , S^{32} , Cl^{35} , Ar^{40} , and Zn^{66} ions allowed the conclusion that in glass without impurities of elements heavier than tungsten, cosmic radiation does not lead to the appearance of background traces. In connection with the fact that the conditions for preservation of the investigated glass are not known, the result obtained earlier with lead glass is only an indirect indication of the existence in nature of long-lived, spontaneously fissioning nuclides. (Four illustrations, 20 bibliographic titles.)

FLEROV, G. N.

transmission, element

IN THE COMMITTEE FOR INVENTIONS AND DISCOVERIES
UNDER THE COUNCIL OF MINISTERS USSR

[Announcement] Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol
42, No 11, November 1972, pp 132-133

The Committee has registered the following scientific dis-
coveries:

G. N. FLEROV, YU. TS. OGANESYAN, YU. V. LOBANOV, YU. A. LAZAREV,
~~Germosovsk~~ citizen J. ZVARA, V. Z. BELOV, V. A. DRUEN, A. G.
DEMID, AND YU. P. KHAITONOV.

"ELEMENT NO. 103 OF MENDELEYEV'S PERIODIC SYSTEM"

Formulation of the discovery: Experimentally established
was the previously unknown phenomenon of formation of a chemical
element with the ordinal number 103. An isotope of that element
with a half-life $T_{1/2} \approx 2$ seconds was obtained during the ir-
radiation of americium with neon nuclei.

Priority of discovery -- 18 February 1970.

Certificate No. 114. Application No. OT-7896.

The data obtained by the authors of the discovery are of
great scientific importance, as they show a divergence of the
experimentally determined radioactive properties of element
No. 103 from the previously predicted properties of element
basis of known semi-empirical laws and require revision on the
latter. The new experimental data relating to the synthesis of the
element No. 103 indicate a real possibility of the synthesis of
heavier chemical elements in nuclear reactions, for example,
of No. 106, and permit much more confidently predicting the proper-
ties of those elements.

transmission, element

15 June 73

UAS 58011

(8)

1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--SEARCH FOR SUPER HEAVY ELEMENTS IN NATURE: BASES AND PERSPECTIVES
-U-
AUTHOR-(02)-FLEROV, G.N., KARAMYAN, S.A.
COUNTRY OF INFO--USSR, ITALY
SOURCE--JINR,P6,4902 DEP. CFSTI (CONF-690945-1), FROM INTERNATIONAL
MENDELEEV CONGRESS, TURIN, ITALY
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, ASTRONOMY,ASTROPHYSICS

TOPIC TAGS--HEAVY NUCLEUS, ATOMIC MASS, ISOTOPE SEPARATION, COSMIC RAY,
STAR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0035

STEP NO--UR/0000/70/000/000/0001/0036

CIRC ACCESSION NO--AM0111235

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AM0111235

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXISTENCE OF LONG LIVED SUPER HEAVY ELEMENTS IN NATURE AND THEIR SYNTHESIS IN STARS ARE DISCUSSED. THEORETICAL PREDICTIONS OF PHYSICAL AND CHEMICAL PROPERTIES OF THESE ELEMENTS WERE ANALYZED. EXPERIMENTAL RESULTS OF THE SEARCH FOR SUPERHEAVY ELEMENTS IN NATURE AND IN COSMIC RAYS ARE REVIEWED. THE PERSPECTIVES OF DEVELOPMENT OF EXPERIMENTAL INVESTIGATIONS IN THIS DIRECTION ARE CONSIDERED. FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA, USSR. FACILITY: LAB. OF NUCLEAR REACTIONS.

UNCLASSIFIED

USSR

UDC 546.799

FLEROV, G. N.

"The Synthesis of and Search for Heavy Transuranium Elements"

Moscow, Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 302-309

Abstract: There have been three periods in the history of the study of transuranium elements. The first period was connected with the development of nuclear engineering. The elements from neptunium to fermium were synthesized by means of multiple neutron capture reactions in high neutron fluxes of reactors and nuclear explosions. The second period involved the use of accelerated heavy ions instead of neutrons for the synthesis of new elements. Element 102 was first reliably identified in Dubna (isotope 102^{256}). Element 103 was discovered and confirmed. The history of the discovery of element 104 and the study of its physical and chemical properties is complicated, but it can be definitely stated that the fact of its synthesis and the observation of its decay was first established at the Nuclear Reaction

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FLEROV, G. N., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 302-309

Laboratory of the Joint Institute for Nuclear Research at Dubna in 1964 and confirmed by the independent method of gas chromatography in 1966 and 1967 (I. ZVARA et al.), as well as by experiments to study the angular distributions of reaction products in 1969 (YU. TS. OGANESYAN et al.). Preliminary data on element 105, obtained in 1968, are now being verified by the collimation method.

The third period in the history of transuranium elements has just begun -- the synthesis of and search for superheavy elements with the ordinal number $Z = 110 + 126$. The hope for success rests on the increased stability of nuclei with closed nucleonic shells (magic-N or magic-Z nuclei). There is already one such example in the trans-uranium region, viz. the so-called subshell with neutron number $N = 152$. Numerous calculations indicate that the existence of superheavy nuclei sufficiently stable for experimental study is possible. The results of studies performed at Dubna suggest that a long-lived spon-

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USSR

FIÉROV, G. N., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 302-309

taneously fissionable radiator exists in the earth's crust. It was originally established that dielectric media in contact with lead, as well as some specimens of lead glass display traces of fission fragments which cannot be attributed to the spontaneous fission of lead. These results were recently verified at Dubna by a new independent method. Spontaneous fission fragments were recorded by large proportional counters with a very low intrinsic background. This method permits the search for spontaneous fission in practically any mineral or compound. The attempt must be made to find in the earth's crust the mineral most enriched with the investigated radiator. Preliminary results along this line have already been obtained by the author's group. In experiments with specimens of lead minerals a positive effect comparable to the results on lead glass is observed. Experiments are now under way at Dubna to measure the number ν (neutrons per fission) for the natural spontaneously fissionable radiator. A neutron detector based on proportional counters filled with He^3 has been created for this purpose. Experiments are now under way in

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FLEROV, G. N., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 302-309

mines with specimens of lead ores and glass containing an admixture of the new natural spontaneously fissionable radiator for the purpose of reducing the background from cosmic particles.

In order to reach experimentally the region of superheavy transuranium elements (synthesis on accelerators), new methods must be developed for the recording and identification of superheavy nuclei, new heavier particles need to be accelerated. A promising method of synthesis may be fission. New possibilities have now appeared for the search for superheavy transuranium elements in cosmic rays. Di-electric detectors are being created which are capable of giving good resolution according to the charge for heavy nuclei at relativistic velocities. Space flight engineering opens up wider prospects for such research than the balloons of P. H. FOWLER. The next step in the study of superheavy elements will be taken with the aid of chemi-

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FLEROV, G. N., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 302-309
cal methods. Although the chemical properties of the observed radiator have not yet been adequately ascertained, the author hopes to achieve success in this direction in the near future.

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UNCLASSIFIED . PROCESSING DATE--17JUL70
TITLE--STABILITY OF HEAVY NUCLEI AND THE LIMIT OF THE PERIODIC SYSTEM -U-
AUTHOR--ELERCV, G.N., CRUIN, V.A., PLEVE, A.A.
COUNTRY OF INFO--USSR
SOURCE--USP. FIZ. NAUK 1970 100(1), 45-52
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, CHEMISTRY
TOPIC TAGS--HEAVY NUCLEUS, PERIODIC SYSTEM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PRECY REEL/FRAE--1976/0199 STEP NC--UR/0053/70/100/001/0045/0092
CIRC ACCESSION NC--APCC42265

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5
12

UNCLASSIFIED

Acc. Nr:

AP0042265

Abstracting Service:
CHEMICAL ABST.

4-70

Ref. Code:

UR0053

84949p Stability of heavy nuclei and the limit of the periodic system. Flerov, G. N.; Druin, V. A.; Plev, A. A. (Ob'edin. Inst. Yad. Issled., Dubna, USSR). *Usp. Fiz. Nauk* 1970, 100 (1), 45-92 (Russ). A comprehensive review is given of methods for the synthesis, sepn., and identification of the transfermium elements. The theoretical possibility for synthesizing superheavy nuclei is discussed in terms of evidence for a 2nd region of stability and the properties of nuclei near "magic" no. nuclei. 148 refs. SRTT

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REEL/FRAME
19760199

Polymers and Polymerization

USSR

UDC 541.15

KUCHER, A. M., PENIONZHKEVICH, YU. E., and FLEROV, N. G.

"Some Characteristics of the Production and Yield of F^{18} From Fluoroplast Under γ - and Neutron Irradiation."

Moscow, Khimiya, Vysokikh Energiy, Vol 7, No 4, Jul-Aug 73, pp 362-366

Abstract: The formation and yield of fluorine and its compounds from fluoroplast has been investigated as a function of various parameters (temperature, surrounding medium, thickness of the fluoroplast samples, etc) under the influence of neutron and γ -quanta streams (10^{10} particles per $cm^2 \cdot sec$). Free fluorine was determined by means of the activation analysis using the radioactive isotope fluorine¹⁸. The results obtained make it possible to use extrapolative techniques in determining the yield of various fluorine containing products from fluoroplast and to reach some conclusions on the mechanism of the reactions occurring in the polymers under nuclear irradiation.

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USSR

UDC 537.311/.312

KAGAN, Yu., Corresponding Member of the USSR Academy of Sciences, and FLEROV, V. N.,

"Lower-Temperature Behavior of the Resistance of a Pure Metal"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 4, 1972, pp 787-790

Abstract: The problem of low-temperature behavior of the resistance of an ideally pure metal has been incompletely studied, especially with regard to the situation with a complex Fermi surface in which the Fermi surface intersects the Brillouin zone boundary, closed or forming an open surface. Direct use of the classical arguments of Peierls is difficult in this case, and the problem of drag and the behavior of the resistance at low temperatures has remained open. In the present article a general analysis is made which permits a joint investigation of all possible cases. A study was made of an infinite crystal without impurities, but only the electron-phonon and phonon-phonon interactions were considered. Only the variation principle following directly from the quasiclassical Boltzman equation and the general properties of the electron distribution function $f(p, n)$ such as continuity and periodicity in a reciprocal lattice space were used. Open and closed Fermi surfaces are considered separately under the implicit assumption of cubic symmetry, and then the analysis is extended to the general case. Physical explanations are offered for the theoretical results.

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1/2 022 UNCLASSIFIED PROCESSING DATE--23JCT70
TITLE--THE PARTICIPATION OF THE LUNGS IN FIBRINOLYTIC PROCESSES OF THE
ORGANISM -U-
AUTHOR--(05)-SOLOVYEV, G.M., GUSEYNOV, CH.S., GEBEL, G.YA., CHISTYAKOV,
V.N., ELEROV, YE.V.
COUNTRY OF INFO--USSR
SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 5, PP 22-25
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LUNG, BLOOD VESSEL, LACTIC ACID, INTRAVENOUS PERFUSION,
ACIDOSIS, FIBRINOLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

ROXY REEL/FRA--1998/0369

STEP NO--UR/0219/70/069/005/0022/0025

IRC ACCESSION NO--AP0121057

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--23OCT70

IRC ACCESSION NO--AP0121057

BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN EXPERIMENTS ON DOGS THE AUTHORS STUDIED THE REACTION OF PULMONARY VESSELS TO THE ADMINISTRATION OF A 30PERCENT SOLUTION OF LACTIC ACID WHICH CAUSES SPASM OF PULMONARY VESSELS AND A STATE OF METABOLIC ACIDOSIS. IT IS SHOWN THAT IN THE BLOOD OUTFLOWING FROM THE LUNGS THE CONTENT OF FIBRINOLYSIS PROACTIVATORS AND FIBRINOLYTIC ACTIVITY ARE GHIGHER IN COMPARISON WITH THOSE IN THE BLOOD INFLOWING TO THE LUNG. FACILITY: SCIENTIFIC RESEARCH INSTITUTE OF CLINICAL AND EXPERIMENTAL SURGERY, MOSCOW.

UNCLASSIFIED

USSR

UDC 51

SRAGOVICH, V. G., SUSHKOV, B. G., FLEROV, YU. A.

"Two-Level Adaptive System of Decentralized Control of Technological Processes"

V sb. Detsentralizovan. metody upr. (Decentralized Control Methods--collection of works), Moscow, 1972, pp 39-42 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V401)

No abstract

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USSR

UDC 51

FLEROV, YU. A.

"Multilevel Dynamic Games and Decentralized Control"

V sb. Detsentralizovan. metody upr. (Decentralized Methods of Control--collection of works), Moscow, 1972, pp 19-25 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V309)

Translation: A study is made of an example of a multilevel structure described by a multilevel dynamic game.

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USSR

UDC: 577.4

FLEROV, Yu. A.

"On Some Classes of Multiple-Input Automata"

V sb. Issled. po teorii samonastroyayushchikhsya sistem (Studies in the Theory of Adaptive Systems--collection of works), Moscow, Vychisl. tsentr. AN SSSR, 1971, pp 96-110 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V374)

Translation: Transformation rules which determine asymptotically optimum automata are compared for the automata introduced in the article by Sragovich (Abstract 4V370). A. Maslov).

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USSR

FLEROV, Yu. A.

"Multilevel Dynamic Games"

Issled. po Teorii Samonastroyivayushchikhsya Sistem [Studies on the Theory of Self-Tuning Systems -- Collection of Works], Moscow, Acad. Sci. USSR Computer Center, 1971, pp 111-152, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V388 by Ya. Klyushin).

Translation: A new representation is suggested for one class of dynamic games. The classical theorems are formulated for this case. The author makes a number of errors.

USSR

UDC 576.895.771.095.38:599.323.4

ARTEM'YEV, M. M. and FLEROVA, O. A., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR

"Scattering of Sandflies From Colonies of Great Gerbils"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 5, 1971, pp 552-556

Abstract: A study was conducted of the flight behavior of two sandfly species, *Phlebotomus papatasi* and *Sergentomyia arpaklensis*, among great gerbil (*Rhombomys opimus* Licht) colonies located on hummocky sands in the Tedzhen region of Turkmenistan, one of the most intensive foci of zoonotic cutaneous leishmaniasis. Gerbils are believed to be the main reservoir of the disease. The flight of *P. papatasi* could be traced only to a distance of 20 m from the center of the colony, where the sandfly population was six times smaller than in the center. Further away the population density remained the same. The flight of *S. arpaklensis* from great gerbil colonies could not be traced, but the population of this species was higher around the abandoned burrows of red-tailed gerbils (*Meriones erythrourus* Gray) and other small animals than in the colonies.

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PHYSICS

Crystals and Semiconductors

USSR

UDC[537.226+537.311.33]:[537+535]

SINYAKOV, YE. V., IUDNIK, YE. F., and FLEROVA, S. A.

"Effect of External Forces on Polarization Reversal Processes of Single Crystals of Barium Titanate"

V sb. Segnetoelektriki i okisnyye poluprovodniki (Ferroelectrics and Oxide Semiconductors -- Collection of Works), Dnepropetrovsk, 1971, pp 34-40 (from RZh-Fizika, No 1, Jan 72, Abstract No LYEL286 by YE. IUDNIK)

Translation: The authors studied the polarization reversal parameters of single crystals of BaTiO_3 acted upon by a transverse electric field and uniaxial mechanical pressure. The method of making the measurements and constructing the holders is described. It was found that a weak biased (transverse) field under 170 v/cm and transverse contraction up to loads of 40-50 kgf/sq cm result in an increase in maximum current and switching time. As shown by study of domain structure, action of a weak transverse field (pressure) leads to c-domainization of a crystal in the (001) plane, and therefore even strongly fixed domains are switched in the direction of the polarization reversing field, causing an increase in t_p and I_{max} . Maximum current and switching time decline with further increase of transverse contraction (field). It is assumed that this variation in switching parameters is caused by "pinching" and by the exclusion of part of the domains from the process of polarization reversal.

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USSR

FLEROVA, S. A., SAMCHENKO, Yu. I.

"Light Radiation by BaTiO_3 Crystals Under Unidimensional Pulse Pressure"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 2, 1972, pp 592-594

Abstract: The authors describe an experiment they performed on BaTiO_3 crystals in which the latter emitted light radiation when put in an unbalanced state by the application of mechanical pressure. The evidence thus obtained tends to support conclusions given in an earlier article published in the same journal by Ye. V. Sinyakov, S. A. Flerova, and G. V. Barinov (10, 1968, 529). In the experiment, the mechanical pressure pulses were obtained by the shock of an elastic sphere against a solid hardened cube. The chamber containing the specimen was light-proof except for a light output to an FEU-19 photoelectric amplifier, with the light pulses recorded on an SI-19 oscillograph. The BaTiO_3 crystals were grown from a solution in KF and had dimensions of the order of $2 \times 2 \times 0.3$ mm. Pressure pulses were always applied along the

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USSR

FLEROVA, S. A. et al, Fizika Tverdogo Tela, Vol 14, No 2, 1972, pp 592-594

/001/ direction, perpendicular to the crystal's major axis, with durations varying from 60 to 600 μ s and at an amplitude of 450 kg/cm². Oscillograms are shown of the recorded light pulses under pressure pulses of the order of 80 kg/cm² and with various durations. The authors are connected with the Dnepropetrovsk State University.

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1/3 018 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--CONNECTION BETWEEN ELECTRIC EXCITABILITY OF THE HIPPOCAMPUS AND THE
DEVELOPMENT OF INHIBITION IN THE PROCESS OF ACOUSTIC EPILEPSY -U-
AUTHOR-(03)-FLESS, D.A., ZORINA, Z.A., ZININA, S.S.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI, 1970, VOL 20, NR 1, PP
139-143
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HIPPOCAMPUS, EPILEPSY, INHIBITION, ACOUSTIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1982/0724

STEP NO--UR/0247/70/020/001/0139/0143

CIRC ACCESSION NO--AP0052182

UNCLASSIFIED

2/3 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0052182

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRICAL EXCITABILITY OF THE HIPPOCAMPUS, THE CAUDATE NUCLEUS, THE MEDIAL GENICULATE BODY AND THE DORSAL COCHLEAR NUCLEUS WAS COMPARED IN TWO GROUPS OF RATS OF THE KM LINE, REACTING WITH SEIZURES TO ACOUSTIC STIMULATION, BUT DIFFERING IN THE DEGREE OF ACTIVE INHIBITION (PRESENCE OR ABSENCE OF AN INHIBITORY PHASE IN THE MOTOR EXCITATION PRECEDING THE SEIZURES), AND IN RATS OF THE WISTAR LINE INSENSITIVE TO SOUND. THE THRESHOLDS WERE DETERMINED OF THE SEIZURES TYPICAL OF EACH OF THE STRUCTURES (FACIAL MYOCLONIC SEIZURES, ADVERSION OF THE HEAD, GENERAL DRASTIC MOTOR EXCITATION). DIFFERENCES WERE FOUND ONLY IN IN TWO GROUPS OF RATS OF THE KM LINE, REACTING WITH SEIZURES TO ACOUSTIC STIMULATION, BUT DIFFERING IN THE DEGREE OF ACTIVE INHIBITION (PRESENCE OR ABSENCE OF AN INHIBITORY PHASE IN THE MOTOR EXCITATION PRECEDING THE SEIZURES), AND IN RATS OF THE WISTAR LINE INSENSITIVE TO SOUND. THE THRESHOLDS WERE DETERMINED OF THE SEIZURES TYPICAL OF EACH OF THE STRUCTURES (FACIAL MYOCLONIC SEIZURES, ADVERSION OF THE HEAD, GENERAL DRASTIC MOTOR EXCITATION). DIFFERENCES WERE FOUND ONLY IN THE HIPPOCAMPUS, THE THRESHOLD OF THE TYPICAL MYOCLONIC SEIZURES WAS ALMOST 2.5 TIME LOWER IN THE SENSITIVE RATS WITHOUT AN INHIBITORY PHASE THAN IN THOSE WITH AN INHIBITORY PHASE AND THAN IN NON SENSITIVE ONES. THE LATTER TWO GROUPS, ALONG WITH A SIMILARITY OF THE THRESHOLDS OF ELECTRICAL SEIZURES, CONSIDERABLY DIFFERED IN THE RATE OF THEIR GENERALIZATION.

UNCLASSIFIED

3/3 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0052182

ABSTRACT/EXTRACT--IT HAS BEEN ASSUMED THAT ENHANCED SEIZURE READINESS OF THE HIPPOCAMPUS DISTURBS ITS INHIBITING FUNCTION AND CAUSES A WEAKNESS OF INHIBITION; ONE OF THE CONDITIONS OF ENHANCED SEIZURE READINESS OF THE RAT BRAIN TO THE ACOUSTIC STIMULATION.

UNCLASSIFIED

89

USSR

UDC: 621.317.089.63

F
FLEYER, A. G.

"Preliminary Results of Experimental Investigations of the Time of Propagation of Frequencies in the Centimeter Wavelength Range"

Dokl. Nauchno-tekhn. seminar "Metrologiya v radioelektronike". Tezisy. Ch. 2
(Reports of the Scientific and Technical Seminar on Metrology in Radio Electronics. Summaries. Part 2), Moscow, 1970, pp 127-131 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7A207)

Translation: In view of the maximum stability of propagation parameters, the centimeter wavelength range is widely used for purposes of transmitting time and frequency standards. To reduce errors in locking the readings of spaced clocks, the time of frequency propagation must be known with the maximum attainable precision. In this regard, data analysis is used as a basis for deriving a formula for calculating the phase lead. It is shown that phase lags may be calculated.

E. L.

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USSR

UDC 529.1

F
FLEYER, A. G.

"Correlation between Phase Velocity Variations in VLF Propagation and Variation in Earth Rotational Velocity"

Moscow, Izmeritel'naya Tekhnika, No 4, Apr 70, pp 33-35

Abstract: Data are presented which show a clear correlation between regular variation in Earth rotational velocity and variation in long-distance transmission phase velocities at very low frequencies. Tests to establish this were made on radio links from London to Irkutsk (6500 km) and to Novosibirsk (5200 km), in which phase velocity differentials were recorded around the clock for intervals up to 230 days. Phasemeter resolution was 0.625 μ sec, and the overall resolution error was about $\pm 3 \mu$ sec. Graphical data are given which show the seasonal correlation of Earth angular velocity variation and measured phase velocity variation. Smoothed data are included showing periodic phase velocity variations over shorter intervals, up to several weeks. The experiment is presented as the first to demonstrate a definite nonrandom relationship between VLF phase velocity and Earth rotational velocity. Further tests are planned to determine the astrophysical or geophysical factors which may be pertinent to both phenomena.

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USSR

UDC 621.316.56

FLEYER, Yu. I.

"A Commutator"

USSR Author's Certificate No 319968, filed 5 Feb 70, published 20 Jan 72
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9,
Sep 72, Abstract No 9A16 P)

Translation: This Author's Certificate introduces a commutator which contains a stator with magnetically controlled contacts arranged around its periphery parallel to the longitudinal axis, and a rotor to which an electromagnet is fixed. To increase the accuracy of the commutations, the rotor is made in the form of an L-shaped strip with an inner flange carrying light sources. Fastened opposite the light sources on the shelf of the rotor are photodiodes connected to the input of a flip-flop whose output is connected to the winding of the electromagnet. Slots are made on the cylindrical generatrix of the stator which coincide with the sources of light and the photodiodes when the rotor moves. Four illustrations.

1/1

USSR

UDC: 621.391.812.3

BREYTMAN, I. M., ~~ELEYSHER, S. M.~~

"Adaptive Reception of Signals With an Unknown Frequency in a Channel With Rapid Fading"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t svyazi. Vyp. 1 (Materials of the Scientific and Technical Conference of the Leningrad Electrical Engineering Institute of Communications--collection of works, No 1), Leningrad, 1971, pp 84-89 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A17)

Translation: Algorithms are derived for adaptive reception of signals which are segments of sinusoidal waveforms with unknown frequency in a channel with fast fading against a background of adaptive noise. Resumé.

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USSR

FLEISHMAN, B. S., KRAPIVIN, V. F., MAKMAK, S. M.

"Trinary Games"

Mat. Analiz i Ego Pril. [Mathematical Analysis and its Applications -- Collection of Works], Vol 4, Rostov-na-Donu, Rostov University Press, 1972, pp 121-129 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V496, by the authors).

Translation: An analytic solution is presented for an antagonistic game, the win function of which $M(x, y)$ takes on three values. In the first problem, the case of a symmetrical matrix game measuring 2×2 is studied. In the second problem, the solution is presented to a continuous game in an n -dimensional unit cube for certain particular cases.

USSR

UDC 8.74

IGNAT'YEV, M. B., FLEYSHMAN, B. S., KHOROSHEVSKIY, V. G., SHCHERBAKOV, O. V.

"Reliability of Homogeneous Computation Systems"

V sb. Vychisl. sistemy (Computation Systems--collection of works), vyp. 48, Novosibirsk, 1971, pp 16-47 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V411)

Translation: A study was made of the problems of reliability of homogeneous all-purpose computation systems. The monitoring and correction procedures for the computation processes are described. Definitions of systems with structural redundancy and long-lived systems are presented. These classes of systems include the known systems of reliability theory. The reliability indexes of the homogeneous all-purpose computation systems are introduced. A study was made of the approaches when estimating the reliability of the elementary computer of the homogeneous all-purpose computation systems. Stochastic models of these systems are constructed which lead to simple formulas for the reliability indexes. It is noted that the numerical results obtained by these formulas coincide with a known degree of accuracy with the results of the more exact but more tedious calculations. Approximate methods of calculating the indexes of the homogeneous all-purpose computation systems are also investigated. Asymptotic estimates of the reliability indexes of the systems are presented for

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USSR

IGNAT'YEV, M. B., et al., Vychisl. sistemy, vyp. 48, Novosibirsk, 1971, pp 16-47

$N \rightarrow \infty$. Divisions of the system into subsystems which are optimal from the point of view of reliability are found. The conditions are presented (logarithmic growth with time of the number of elementary computers) insuring reliability of the system as high as one might like. It is established that a sufficiently high reliability of such systems can be achieved, in particular, if their program organization is either by the principle of systems with structural redundancy or by the principle of long-lived systems. The proportion of the computers comprising the structural redundancy does not exceed a tenth part of the number of elementary computers in the system. The investigated principles have the advantage that they do not permit idle time of the elementary computers which are in a state of good repair. The methods of solving the monitoring and diagnostic problem for failures in homogeneous computation systems are noted. Calculation formulas were obtained for the technical-economic indexes. The problem of the optimal number m^* of devices in the repair system is solved. It was found that m^* comprises an insignificant portion of the number N of computers in the system; in addition, the ratio $m^*/N \rightarrow 0$ when $N \rightarrow \infty$. The results are illustrated by examples of homogeneous all-purpose computation systems. It is noted that highly efficient and highly reliable systems can be constructed on the existing physical-technological base. From the point of view of reliability,

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USSR

IGNAT'YEV, M. B., et al., Vychisl. sistemy, vyp. 48, Novosibirsk, 1971, pp 16-47

efficiency and cost homogeneous computation systems are a prospective area in computer engineering. The bibliography has 25 entries.

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USSR

UDC 8.74

FLEYSHMAN, B. S.

"Elements of the Theory of Potential Efficiency of Complex Systems"

Elementy teorii potentsial'noy effektivnosti slozhnykh sistem (cf. English above), Moscow, "Sov. Radio," 1971, 225 pp, ill., 74 k. (from RZh-Matematika, No 5, May 72, Abstract No 5V578K by V. MIKHAYEV)

Translation: The book states known and new findings of the theory of the potential efficiency of complex systems. The book consists of seven chapters. Chapter I gives basic concepts and definitions of complex systems, two approaches to the construction of mathematical models of complex systems, and laws of complex systems. Chapters II, III, IV, and V respectively consider basic characteristics of the functioning of complex systems: reliability, noise immunity, controllability, and self-organization. Chapter VI gives the concept of complex system survivability, poses problems in optimization of the behavior of media and structures of systems, and derives a limiting law of survivability. Chapter VII is devoted to principles of the theory of the realizability of the potential efficiency of complex systems, with due regard for the limitation of their storage speed and space. The entire exposition is accompanied by diagrams that facilitate use of the cited formulas. It is noted that the book is

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USSR

FLEYSHMAN, B. S., Elementy teorii potentsial'noy effektivnosti slozhnykh sistem, 1971, 225 pp

intended for scientists, systems engineers, and biologists, as well as students and graduate students in the pertinent specialties. Bibliography with 54 titles.

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UDC: 8.74

USSR.

FLEYSHMAN, B. S.

"Elements of the Theory of Potential Effectiveness of Complex Systems"

Elementy teorii potentsial'noy effektivnosti slozhnykh sistem (cf. English above), "Sov. radio", 1971, 225 pp, ill. 74 k. (from RZh-Kibernetika, No 5, May 72, Abstract No 5V578 K)

Translation: The book presents old and new results of the theory of potential effectiveness of complex systems. There are seven chapters. The first chapter gives the basic concepts and definitions of complex systems, two approaches to construction of mathematical models of complex systems, and the laws of complex systems. The second, third, fourth and fifth chapters deal with the basic properties of operation of complex systems -- reliability, interference immunity, controllability and adaptability. The sixth chapter presents the concept of viability of a complex system, and formulates the problem of optimizing the behavior of the medium and the structure of the system, deriving the limiting law of viability. The seventh chapter is devoted to the principles of the theory of realizability of the potential effectiveness of complex systems with regard to limitations on speed and memory volume. The entire presentation is accompanied by graphics which

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USSR

FLEYSHMAN, B. S., Elementy teorii potentsial'noy effektivnosti slozhnykh sistem, "Sov. radio", 1971

facilitate use of the formulas which are given. The book is written for science workers, systems engineers and biologists, and also for undergraduate and graduate students majoring in the appropriate fields. Bibliography of 54 titles. V. Mikheyev.

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USSR

UDC: 51:621.391

FLEYSHMAN, B. S.

"Limiting Possibilities for Guaranteeing Reliability in the Case of Breakdowns and Failures"

V sb. Teor. kibernetika. Vyp. 2 (Theoretical Cybernetics--collection of works, No 2), Kiev, 1970, pp 94-104 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V394)

Translation: The author studies problems associated with evaluating the limiting possibilities of guaranteeing the reliability of systems in the face of breakdowns and failure of elements. For the case of breakdowns, these limiting laws are based on the well-known Shannon theorem. For cases of failures, specific limiting laws arise which take account of optimum separation of the system into subsystems.

UDC 519.2:62-50

USSR

FLEYSHMAN, B. S.

"Statistical Limits of Effectiveness of Complex Decision Systems"

V sb. Ispol'z. izbytochnosti v inform. sistemakh (Use of Redundancy in Data Processing Systems -- Collection of Works), Leningrad, "Nauka", 1970, pp 28-38 (from RZh-Matematika, No 10, Oct '70, Abstract No 10V167)

Translation: The general laws of complex systems establish the limits of reliability (stability), informational ability, controllability, and self-organization for their mathematical models. They have a statistical dynamic character and determine the minimum limits of redundancy necessary for suppressing disturbing factors. Well-known general laws for decision systems are given, formulated for three levels of investigation: the first level is an existence theorem, the second level is mathematical designability, and the third is technical designability. The generality of the formulations of the well-known general laws for complex systems is shown at the level of the existence theorems, and the identical nature of difficulties arising at the deeper levels is also shown. Authors abstract.

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USSR

UDC 621.375.4:621.375.132.3

KADUK, B. G., FLEYSHMAN, I. V., MASYURENKO, YU. A., RALLEV, I. N.

"Application of an Integrated Circuit of a Differential Amplifier as the Emitter Repeater without a Level Shift"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Engineering. Scientific and Technical Collection. Microelectronics), 1971, vyp. 5(31), pp 147-148 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5D113)

Translation: An emitter repeater without zero level shift is proposed which is based on a semiconductor integrated circuit of the P 2222 differential amplifier without additional elements. The dynamic range of the input voltages is 0.1-4.0 volts; the transmission characteristic is rectilinear; the transmission coefficient is 0.97. In the temperature range of 20-70° C the drift of the output voltage is $< 0.01\% \text{ deg}^{-1}$. This is explained both by the identicalness of the transistors and the equality of their temperatures. The amplifier can be used in electronic phase meters. There is 1 illustration and a 2-entry bibliography.

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USSR

UDC 661.665.1:621.313.538.4

ZELIKSON, YU. M., RESHETOV, YE. P., FLID, B. D., VINOGRADOV, YU. A.

"Study of Silicon Carbide Electrodes for an Open-Cycle Magnetohydrodynamic Generator"

V sb. Magnitogidrodinam. metod polucheniya elektroenergii (Magnetohydrodynamic Method of Obtaining Electric Power--collection of works), vyp. 3, Moscow, Energiya, 1972, pp 98-110 (from RZh-Aviatsionnyye i raketnyy dvigateli ot del'-nyy vypusk, No 11, Nov 72, Abstract No 11.34.149)

Translation: Results are presented from a study of silicon carbide electrodes in a device simulating the conditions in an open cycle magnetohydrodynamic generator channel. Data are presented on the effect of the plasma composition on the nature of the electrode processes. A study was made of the effect of the potassium additive concentration on the shape of the volt-ampere and sound-ing characteristics. The relation is presented for the cathode drop as a func-tion of current at different potassium concentrations in the flow. It was established that with a potassium concentration of 0.3% and more there are in practice no cathode drops on the silicon carbide electrodes at $T_{el} \geq 1,350^{\circ} \text{C}$. A relation was found for the limiting distributed discharge currents as a func-tion of the electrode temperatures. The experimental values of these currents

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USSR

ZELIKSON, YU. M., et al., Magnitogidrodinam. metod polucheniya elektroenergii, vyp. 3, Moscow, Energiya, 1972, pp 98-110

in the electrode temperature range of 1,350-1,500° C coincide satisfactorily with the ones calculated by the Richardson formula for $A=120$ amps/(cm²·deg²) and $\phi_{\text{eff}} = 2.7$ electron volts. The dependence of the mean erosion rate of the electrodes on the temperature and current density was defined. It was demonstrated that at an electrode temperature of 1,500° C the erosion does not in practice depend on the current density. There are 10 illustrations and a 13-entry bibliography.

2/2

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1/2 011 CLASSIFIED PROCESSING DATE--11SEP70
TITLE--PRINCIPLES OF THE OPERATION OF THE METALLIC ELECTRODES OF A
MAGNETOHYDRODYNAMIC GENERATOR -U-
AUTHOR--ZELIKSON, YU.M., KIRILLOV, V.V., RESHETOV, E.P., FLID, B.D.
COUNTRY OF INFO--USSR
SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(1) 193-202
DATE PUBLISHED-----70
SUBJECT AREAS--ENERGY CONVERSION (NON-PROPULSIVE), ELECTRONICS AND
ELECTRICAL ENGR.
TOPIC TAGS--ELECTRODE DESIGN, ELECTRODE PROPERTY, MAGNETOHYDRODYNAMIC
GENERATOR
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/0603 STEP NO--UR/0294/70/004/001/0133/0302
CIRC ACCESSION NO--AP0107200
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107200

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STEEL, STAINLESS STEEL, AND CU ELECTRODES WERE EVALUATED, IN AN APP. DESCRIBED IN DETAIL, UNDER CONDITIONS APPROACHING THOSE OF ELECTRODES IN MHD GENERATORS. NONLINEAR V,A CHARACTERISTICS WERE OBSD. IN THE EXPTS.; AT CURRENT OF 0.1-0.15 A AND THRESHOLD VOLTAGES OF 70-120 V, AN ARC DISCHARGE, BASED ON FLUCTUATIONS IN GAS FLOW, WAS OBSD. AT THE CATHODE. OPERATIONS IN THE ARC DISCHARGE RANGE HAVE A SIGNIFICANT EFFECT ON THE ELECTRODE CURRENT FLUCTUATIONS; THE RANDOMLY FORMED CATHODE SPOTS FORMED VARY AS TO QUANTITY, SIZE, AND CURRENT VALUE. BASED ON THE TOTAL ELECTRODE CURRENT, A RELATION WAS DEVELOPED FOR THE CURRENT FLUX IN A SPOT.

UNCLASSIFIED

Acc. Nr.: AP0041158

Ref. Code: 480121

USSR

UDC 621.923.02:621.921.34

FLID, M. D.

"Elastic Diamond Grinding of Manysided Hard-Alloy Plates"

Moscow, Stanki i Instrument, No 1, 1970, pp 24-26

Abstract: A new method for grinding the edges and apices of
manysided hard-alloy plates with openings has been developed
by the All-Union Scientific Research Institute of Tools, as well
as an experimental semiautomatic machine for grinding in accord-
ance with this process. The machined piece is about the grinding
wheel in accordance with a master form. Grinding two plates at
a time, the machine has an average productivity of 50 pieces per
hour; the precision of the geometrical shape and dimensions of the
plates correspond to precision specifications (± 0.025 mm).
The cleanness of the machined surfaces corresponds to the 8 - 9th
class.

Reel/Frame
19750941

USSR

UDC 541.65

KIMEL'FEL'D, Ya. M., SMIRNOVA, YE. M., PERSHIKOVA, N. I., KALIYA, O. L., TEMKIN, O. N., and FLID, R. M., Institute of Spectroscopy, Academy of Sciences USSR, and Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov, Moscow

"Vibrational Spectra and the Structure of Phosphine and Phosphite Complexes of Palladium Chloride and Bromide"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 4, Jul-Aug 72, pp 622-625

Abstract: On the basis of data obtained by IR and Raman spectroscopy of the phosphine complexes $\text{Pd}(\text{PPh}_3)_2\text{X}_2$ ($\text{X} = \text{Cl}, \text{Br}$) and the phosphite complexes $\text{Pd}/\text{P}(\text{OPh})_3/2\text{X}_2$ ($\text{X} = \text{Cl}, \text{Br}$), it was established that the phosphine complexes have a trans-structure and the phosphite complexes a cis-structure. The difference in structure explains why the phosphite complexes are effective catalysts in the synthesis of acrylic acid esters from acetylene at atmospheric pressure according to $\text{C}_2\text{H}_2 + \text{CO} + \text{ROH} \rightarrow \text{CH}_2=\text{CH}-\text{COOR}$, while the phosphine complexes are inactive in catalyzing this reaction. The authors thank G. N. Zhizhira, N. I. Afanas'yeva, and A. V. Bobrova for assistance in determining the spectra of the complexes.

1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--MECHANISM OF THE ELECTROREDUCTION OF ORGANOMERCURY SALTS -U-
AUTHOR--(05)-YESIKOVA, I.A., TEMKIN, O.N., TOMILOV, A.P., FLID, R.M.,
YAKOVLEVA, N.N.
COUNTRY OF INFO--USSR
SOURCE--Zh. Fiz. Khim. 1970, 44(1), 264-5 (RUSS)
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ELECTROLYTIC REDUCTION, ORGANOMERCURY COMPOUND, CHEMICAL
REACTION MECHANISM, ALCOHOL, ETHANOL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2063 STEP NO--UR/0076/70/044/001/0264/0265
CIRC ACCESSION NO--AP0125050
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125650

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISM OF THE ELECTROCHEM. STAGE OF THE ADDN. OF VARIOUS MOLS. TO OLEFINS IN AN ELECTROCHEM. SYSTEM IN THE PRESENCE OF HG SALTS WAS STUDIED: C SUBN H SUB2N PLUS HX YIELDS C SUBN H SUB2N POSITIVE X, WHERE X EQUALS OH, OR, $RC(O)O$, NHR. THE INTERMEDIATE SIGMA ORGANOMETALLIC COMPODS. ARE FORMED FROM OLEFINS AND HG SALTS IN HX SOLNS. AT THE ELECTROLYSIS OF MERCURIOETHANOL SALTS ON A CU AMALGAM CATHODE (PH 14, 0.01 A-CM PRIME2) THE PROCESS OCCURRED IN STEPS. THE MECHANISM OF THE FORMATION OF ALC. AND C SUB2 H SUB4 AT 1.7-1.9 V IS AS FOLLOWS: HG(C SUB2 H SUB4 OH) SUB2 PLUS E PRIME NEGATIVE YIELDS H SUB2 G HGC SUB2 H SUB4 OH PLUS ETOH; HG C SUB2 H SUB4 OH PLUS E PRIME NEGATIVE YIELDS (FAST) (HGC SUB2 H SUB4 OH) PRIME NEGATIVE YIELDS (SLOW) HG PLUS C SUB2 H SUB4 PLUS CH PRIME NEGATIVE. THE SYM. PRODUCT DIETHANOLMERCURY WAS OBTAINED BY ELECTROLYSIS OF 4M MERCURIOETHANOL CHLORIDE SOLN. IN ALK. MEDIA AT 0.8 V. FACILITY: MOSK. INST. TONKOI KHIM. TEKHNL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

172 015 UNCLASSIFIED PROCESSING DATE--3006170
TITLE--KINETICS AND MECHANISM OF CATALYTIC CONVERSIONS OF ACETYLENE. VI.
HYDRATION AND HYDROCHLORINATION OF ACETYLENE IN SOLUTIONS OF CUPROUS
AUTHOR--(05)--SHESTAKOV, G.K., YERMAKOVA, A., MIKHALCHENKO, V.G., TEMKIN,
O.N., ELID, R.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 406-11,
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL-REACTION MECHANISM, CHLORINATION, HYDRATION,
ACETYLENE, COPPER CHLORIDE, CATALYSIS, REACTION KINETICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0892 STEP NO--UR/0076/70/044/002/0406/0411
CIRC ACCESSION NO--AP0124555
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124555

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF HYDROCHLORINATION AND HYDRATION OF C SUB2 H SUB2 WERE MEASURED IN CUCLNH SUB4 CL, HCL, H SUB2 O SOLNS. AT 80DEGREES IN A FLOWING GRADIENT FREE REACTOR. THE RATE OF HYDROCHLORINATION W PRIMEX EQUALS 0.573 TIMES 10 PRIME NEGATIVE6 A SUBCUPOSITIVE PRIME1.48 A SUBCLNEGATIVE PRIME2.7P SUBC2H2H SUBO A SUBH2O AND THE RATE OF HYDRATION W PRIMEA EQUALS 3.9 3.19 TIMES 10 PRIME NEGATIVE6 A SUBCLNEGATIVE PRIME1.44 P SUBC2H2 H SUBO A SUBH2O)-(1 PLUS 2.6 H SUBO A SUBH2O). THE FRACTIONAL VALUES OF THE EXPONENTS AND AN ANAL. OF THE PROPOSED REACTION MECHANISM INDICATE THE PRATICIPATION OF CUCL PRIME2 NEGATIVE, CUCL SUB3 PRIME2NEGATIVE, AND CU SUB2 CL SUB3 PRIME NEGATIVE. FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:

AP0047410

Abstracting Service:

GEOPHYSICAL ABST.

5/70

Ref. Code:

2 R 0065

91859a Dependence on chemical structure of the lower concentration limit for the propagation of an alkane flame. Korol'-chenko, A. Ya.; Bobkov, A. S.; *Eng. R.* (USSR). *Khim. Tekhnol. Topl. Masel* 1970, 15(1), 21-2 (Russ). The lower concn. limit C_1 of an alkane C_nH_{2n+2} was calcd. by the equation

$$C_1 = \sum_{i < j=1}^4 n_{ij} Q_{ij}, \text{ where } i, j \text{ are the primary, secondary, etc. C atoms, } Q_{ij} \text{ the combustion heat related to the bonds } C_i - C_j.$$

Q_{ij} for the calen. was obtained according to the structural formula of the alkane from literature data. Thus, C_1 of 2,2,3-trimethylbutane, whose no. of n_{ij} bonds $C_i - C_j$ were $n_{12} = 2$, $n_{13} = 3$, $n_{14} = 1$, the primary, tertiary and quaternary C being marked by the indexes 1, 3, and 4, resp., was $C_1 = 1180.72 \times 228.18 + 3 \times 210.01 + 69.40 = 1.02 \text{ vol. } C_1$. The higher difference between the calcd. and exptl. data for 9 alkanes was 0.08 vol. C_1 . The equation reflected the isomeric effect. C_1 decreased with the increase of the mol. wt. but, for the high homologs, the effect of the mol. wt. was lower. The alkane with branched Me and Et groups had C_1 similar to that of the normal-structure alkanes due to the insignificant difference in their combustion heat. Comparative calcd. and exptl. data are tabulated. GGJR

REEL/FRAME
19790936

1/2 032 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--REMOVAL OF ACETYLENE IMPURITIES FROM GASEOUS HYDROCARBONS,
POLYMERIZATION OF ACETYLENE ON A COPPER ALUMINUM SPINEL CATALYST -U-
AUTHOR--(03)-CHERNYUK, G.P., AGROSKIN, I.I., FLID, R.M.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(2), 201-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYMERIZATION, ACETYLENE, CATALYST ACTIVITY, HYDROGEN,
ETHYLENE, COPPER, HEAT OF REACTION, CATALYST REGENERATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3006/0954

STEP NO--UR/0204/70/010/002/0201/0208

CIRC ACCESSION NO--AP0134672

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134672

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PREPN. OF THE CATALYST WAS DESCRIBED EARLIER (G. P. CHERNYUK, ET AL., 1970). THE CATALYST ACTIVITY DEPENDS LARGELY ON ITS ACTIVATION (OR REGENERATION) TEMP.; THE OPTIMUM IS 900DEGREES FOR 1-2 HR. DUE TO HIGH CATALYST ACTIVITY ITS SP. SURFACE AREA HAS LITTLE EFFECT ON THE REACTION RATE, AND SPACE VOL. VELOCITIES LESS THAN OR EQUALS TO 30,000 HR PRIME NEGATIVE ARE POSSIBLE ON THE SOLID BED CATALYSTS. THE CATALYST SHOULD CONTAIN 20-5PERCENT CU; LOWER AMTS. OF CU PROMOTE THE FORMATION OF H AND ETHYLENE AS WELL AS OF THE SOLID POLYACETYLENES (I). THE EFFECT OF TEMP. ON THE REACTION RATE CONST. IS GIVEN BY $K \text{ EQUALS } 11.34 \text{ EXP}(\text{MINUS } 5100 + RT)$. THE POLYMN. ACTIVATION ENERGY AND THE EXOTHERMIC HEAT OF REACTION ARE 5 PLUS OR MINUS 1 AND 60-70 KCAL-MOLE RESP. THE HEAT OF I COMBUSTION IS 9-10 KACL-G, WHICH SUGGESTS THAT ON THE INDUSTRIAL SCALE THE FLUIDIZED CATALYST BEDS ARE NECESSARY FOR ADEQUATE HEAT DISSIPATION DURING BOTH THE POLYMN. AND REGENERATION CYCLES.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--KINETICS AND MECHANISM OF THE CATALYTIC DIMERIZATION OF ACETYLENE.
IV. EFFECT OF TEMPERATURE ON THE REACTION RATE -U-
AUTHOR--(04)--SHESTAKOV, G.K., TIKHONOV, G.F., TEMKIN, O.N., FLID, R.M.
COUNTRY OF INFO--USSR
SOURCE--KINET. KATAL. 1970, 11(3), 575-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL KINETICS, DIMERIZATION, ACETYLENE, CHEMICAL REACTION
RATE, TEMPERATURE DEPENDENCE, EQUILIBRIUM CONSTANT, ACTIVATION ENERGY,
CHLORINATION, HYDROGEN CYANIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605012/D02 STEP NO--UR/0195/70/011/003/0575/0578
CIRC ACCESSION NO--AP0140284

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140284

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXTREME DEPENDENCE OF RATE OF C SUB2 H SUB2 DIMERIZATION ON TEMP. WAS STUDIED. IN 50-95DEGREES REGION, ALL PARAMETERS OF KINETIC EQUATION OF C SUB2 H SUB2 DIMERIZATION CHANGE IN DIFFERENT WAYS AND THE EFFECTIVE RATE CONST. (K SUBEFF) AND ELEMENTARY STAGE EQUIL. CONST. (K SUBA) CHANGE WITH TEMP. ACCORDING TO THE EQUATIONS: $K_{SUBEFF} = 8.92 \times 10^3 \exp(30,500 - RT)$ MOLE L. PRIME NEGATIVE1 $H R = \text{PRIME NEGATIVE1} \text{ ATM PRIME NEGATIVE2}$ AND $K_{SUBA} = 6.3 \times 10^3 \exp(16,800 - RT)$ ATM PRIME NEGATIVE1. THE NEG. VALUE OF ENERGIES OF ACTIVATION IN THESE EQUATIONS IS DISCUSSED AND AN ANALOGY IS GIVEN TO HYDROCYANATION AND HYDROCHLORINATION OF C SUB2 H SUB2 IN THE PRESENCE OF CU(I). FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/3 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--MECHANISM OF THE ACTION OF MULTICOMPONENT METAL COMPLEX CATALYSTS
IN SOLUTIONS -U-
AUTHOR-(04)-TEMKIN, O.N., KALIYA, O.L., SHESTAKOV, G.K., FLID, R.M.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(2), 398-401
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL REACTION MECHANISM, CATALYST ACTIVITY, ALKENE,
ACETYLENE, METAL CATALYST, ORGANOMERCURY COMPOUND, EXCHANGE
REACTION, PALLADIUM COMPOUND, ORGANOCOPPER COMPOUND, ACETIC ACID,
CHLORINATION, COPPER CHLORIDE, CHLORINATED ORGANIC COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/1537 STEP NO--UK/0020/70/190/002/0398/0401
CIRC ACCESSION NO--AT0100162
UNCLASSIFIED

2/3 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0100162

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LITERATURE DATE WERE CRIT. REVIEWED CONCERNING THE ACTION MECHANISMS OF MULTICOMPONENT METAL COMPLEX CATALYSTS IN REACTION INVOLVING OLEFINS, AROMATIC COMPOS., AND ACETYLENE. THE ADDITIVE, THE SUBSTRATE ACTIVATION, AND THE STEP BY STEP MECHANISM WERE DISCUSSED, TOGETHER WITH THE MECHANISM IN WHICH ONLY CONC. AND ACTIVITY OF THE METAL CATALYST COMPLEX ARE AFFECTED BY ONE OF THE CATALYTIC SYSTEM COMPONENTS. MOREOVER, EXPTL. STUDIES SHOWED THAT PHOAC WAS OBTAINED WITH 78-84PERCENT YIELD WITHIN 6 HR BY THE CONVERSION PHHGOAC-(NA O AC) YIELDS PHOAC PLUS HG IN BOILING ACOH. THE FOLLOWING RESULTS WERE ESTABLISHED FOR THE EXCHANGE REACTIONS OF PHHGOAC WITH PDCL SUB2, PD(OAC) SUB2, AND CU(OAC) SUB2 IN GLACIAL ACOH: (1) REACTIONS OF ELECTROPHILIC SUBSTITUTION WERE MARKEDLY FASTER THAN THE OXID. REON. HETEROLYSIS OF PD AND CU ORGANOMETALLIC COMPS.; (2) BIPHENYL WAS FORMED FAST AND QUANT. AT LOW TEMPS. IN THE PRESENCE OF PDCL SUB2; (3) IN THE PD (OAC) SUB2-NAOAC SYSTEM, PHOAC AND BIPHENYL WERE FORMED WITH ABOUT 25PERCENT YIELD; (4) THE EXCHANGE OF PHHGOAC WITH CU(OAC) SUB2 OCCURRED AT 60-80DEGREES, BUT PHENYLCUPRIO ACETATE DEGRADATION OCCURRED AFTER LONG HEATING IN BOILING ACETIC ACID, AND THE PHOAC SO FORMED WAS RAPIDLY MERCURATED AND SEPD. AS PHENOLMERCURIO ACETATE CHLORIDE. EXPTS. SHOWED THAT EITHER TRANSCHLORO(BETA CHLOROVINYL)MERCURY OR BETA CHLOROVINYLCOPPER WERE FORMED IN BOTH HYDROCHLORINATION AND OXYCHLORINATION OF ACETYLENE AS INTERMEDIATE COMPS., ACCORDING TO WHETHER HGCL SUB2-HCL OR CUCL HCL SOLNS. WERE USED FOR THE REACTION.

UNCLASSIFIED

3/3 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--ATO100162

ABSTRACT/EXTRACT--THREE MECHANISMS WERE IDENTIFIED IN SUCH PROCESSES WHEN
THEY WERE CARRIED OUT IN CUCL CUCL SUB2 AND HGCL SUB2-CUCL SUB2 SOLNS.

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UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--CATALYTIC DEHYDROCHLORINATION OF CHLOROETHANES. 1. CATALYTIC
DEHYDROCHLORINATION OF 1,2,DICHLOROETHANE -U-
AUTHOR-(03)-GULEVA, A.A., ANTONOV, V.N., FLID, R.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 249-52

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATION, CHLOROETHANE, CATALYST ACTIVITY, ACTIVATED
CARBON/(U)AG2 ACTIVATED CARBON, (U)AG3 ACTIVATED CARBON, (U)AG5
ACTIVATED CARBON, (U)AR3 ACTIVATED CARBON, (U)BAU ACTIVATED CARBON,
(U)SKT ACTIVATED CARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/1404

STEP NO--UR/0076/70/044/001/0249/0252

CIRC ACCESSION NO--AP0116851

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116851

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CATALYTIC ACTIVITY OF ACTIVATED C OF AG-2, AG-3, AG-5, AR-3, BAR, SKT TYPES WAS INVESTIGATED. THE MOST ACTIVE WAS THE AG-2 TYPE (SIMILIAR TO 58PERCENT CONVERSION OF C SUB2 H SUB4 CL SUB2 AT 320DEGREES). THE KINETICS OF DEHYDROCHLORINATION OF 1,2,DICHLOROETHANE ON THE GIVEN CARBONS TREATED WITH HCL SOLN. WAS STUDIED, AND WAS A 1ST ORDER REACTION WITH RESPECT TO C SUB2 H SUB4 CL SUB2. THE KINETIC PARAMETERS OF THE REACTION WERE DETD. THE ACTIVATION ENERGY FOR CARBONS AG-2, AG-5, AG-3, AR-3, BAU WAS 21000, 19000, 18000, 17000 AND 8000 KCAL-MOLE, RESP., AND THE COEFF. WAS 2.09 TIMES 10 PRIME9, 3.16 TIMES 10 PRIME9, 4.17 TIMES 10 PRIME9, 4.08 TIMES 10 PRIME8, 1.41 TIMES 10 PRIME5. FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM, LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--2306170
TITLE--GAS PHASE REACTIONS FOR THE PREPARATION AND TRANSFORMATIONS OF
CHLORINATED ETHANES. CHLORINE INITIATED DEHYDROCHLORINATION OF
AUTHOR--(05)-KRISHTAL, N.F., FLID, R.M., PIMENOV, I.F., SONIN, E.V.,
TREGER, YU.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 248-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHLORINATION, CHLOROETHANE, CHEMICAL KINETICS, CHEMICAL
REACTION RATE, CALCULATION, ACTIVATION ENERGY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1405 STEP NO--UR/0076/70/044/001/0243/0249
CIRC ACCESSION NO--AP0116852
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116852

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE REACTION IS A HALF ORDER REACTION WITH RESPECT TO CL AND C SUB2 H SUB2 CL SUB4. TO DET. THE KINETIC PARAMETERS, A SERIES OF EXPTS. WERE CARRIED OUT AT 350-425DEGREES BY CHANGING (FOR EACH INVESTIGATED TEMP.) CL AND C SUB2 H SUB2 CL SUB4 AMTS. THE REACTION RATE CONSTS. WERE CALCD., AND A DIAGRAM WAS PRESENTED OF THE DEPENDENCE LOG K EQUALS F(1-T). THE ACTIVATION ENERGY WAS 23.8 KCAL-MOLE, AND THE COEFF. 6.67 TIMES 10 PRIME7 SEC PRIME NEGATIVE1. FACILITY: INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.391.622

AL'PERT, Ya. L., ZABAVINA, I. N., KAPUSTINA, O. V., and FLIGEL,
D. S.

"Brusque Changes in Phase Velocity and Field Computations of Low-Frequency Waves in the Low-Altitude Spherical Waveguide"

Moscow, V sb. X Vses. konf. po rosprostr. radiovoln. Tezisy dokl. Sekts. 1 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972 pp 188-192 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A321)

Translation: Results are given of computations of the amplitude and phase of electric-field radial components $|E_r(D,f)|$, $\Psi(D,f)$, of average $\bar{v}(D,f)$ and differential $v_g(D,f)$ phase velocities, in a low-altitude spherical waveguide for an isotropic conducting ionosphere and an infinitely conducting earth surface. Five illustrations, bibliography of six. A. L.

1/1

FLIGEL, M.D.

RND / 12-160/5-MAY 73
Buc 72

VII. ATMOSPHERIC PHYSICS

Demedikov, Ye. A., G. V. Puklin, Yu. V. Kuznetsov, S. N. Mityagin, N. P. Morozov, Yu. K. Perekhvatov, and M. D. Fligel',

Reception of Kosmos-381 signals from a conjugate point region. Kosmicheskiye issledovaniye, no. 2, 1972, 302-303.

An attempt is described to detect satellite r-f signals from a conjugate point, with the object of precluding the possible anomalous magnetospheric or ionospheric modes that may be excited from ground-based transmitters in conjugate point experiments. The tests were done in December, 1970 using the Kosmos-381 satellite which broadcast at 2, 3.2, 5.4, 8.6, 10.4 and 12.8 MHz. Pulse power was 100w, and pulse width was 150μs at a 48 Hz repetition rate; reception was monitored with wideband delta or rhombic arrays at both the Moscow and Gor'kiy tracking stations. During part of the test period the orbital plane included both the receiver and conjugate points; the remaining orbits included the conjugate point only.

In the 13th recording session with transmission at 12.8 MHz, a signal from the conjugate point (lat. 39.50° S, long. 550° E) was clearly received at Moscow for an interval of 20 seconds, corresponding to a satellite travel of 150 km. The magnetosphere channel width was however somewhat less than this value, since the satellite path was presumably at some inclination to it, and also because the channel tends to "trap" the transmitted signal near its boundaries. Analogous reception at Gor'kiy was only for 0.25 to 0.5 sec, evidently because the satellite only grazed the waveguide channel. In some cases conjugate point reception was obscured by noise in the 12.8 MHz range; however there were cases where clear line-of-sight signals were recorded with no corresponding conjugate point reception.

USSR

UDC 681.142.1.0012.52:621.3.049.75.001.51

FLITSHTEYN, E. M.

"On Automating the Design of Some Flat Modules of Radio-Electronic and Relay-Contact Equipment"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 125-132

Abstract: The author presents the basic ideas of the method of formal synthesis, classifies problems and indicates basic mathematical laws. Six illustrations.

1/1

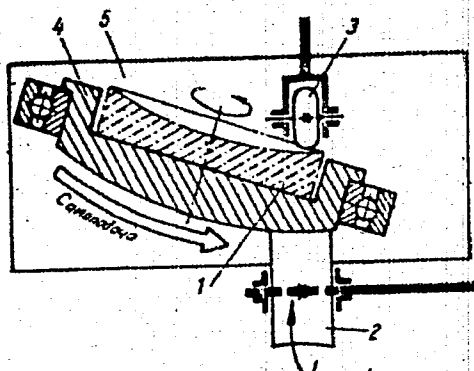
AA0040679- Flomenblit, A. I. UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 70

241480 SURFACE HARDENING UNIT FOR ROTORS (1) placed between driver and idler rollers (2,3), whereupon the roller (2) is started so that it contacts the cam (4) which is arranged equidistant from the rotor in work and thus rotates it. As the cam axis does not coincide with the axial planes of the rollers, the cam is fed together with the rotor over the support (5) along a generatrix of the cam and the surface for hardening. This arrangement expands the scope for centreless hardening in that it allows the workpiece to feed along its generatrix and thus permit the hardening of complex shapes.

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FLORENSKIY, P. V.

Lunar geology

PROBLEMS OF LUNAR GEOLOGY

Edited by A. V. Peyve

Translation of "Problemy Geologii Lunny."
"Nauka" Press, Moscow, 1969

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NASA TTF-689

EXPLANATORY NOTES FOR THE GEOLOGICAL-MORPHOLOGICAL CHARTS
OF THE SOUTHERN PART OF MARE DESERTUM, THE CRATER
COPERNICUS AND ITS VICINITY

P. V. Florensky

ABSTRACT. The charts for this region are discussed
on the basis of observations made by lunar orbiter
spacecraft and others. The historical development of
this chart is traced back to 1893.

EXPLANATORY NOTES FOR THE GEOLOGICAL-MORPHOLOGICAL CHART
OF THE NORTHERN PART OF MARE DESERTUM

M. S. Morley

ABSTRACT. A general discussion is given of the lunar
features and geology within this region. The historical
development of these charts is traced. Data from the Ranger
spacecraft are described.

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SOME FEATURES OF THE SMALL CRATERS OF THE MOON

A. L. Sukhanov

ABSTRACT. Craters, which are craters on the order of a few kilometers, are considered to be of impact origin, and therefore have features which are distinctly different from those of large craters on the moon. Research by American and Russian scientists on the topic is discussed.

UNIFORM DISTRIBUTION OF ANGULAR STRUCTURES ON THE MOON ON THE BASIS OF THEIR DIAMETER

^{AC}
~~P. V. Poroshin, Ye. I. Zheleznyy,~~
~~S. V. Pechenkin and Yu. G. Rimakov~~
^{AC}

ABSTRACT. The irregular size frequency-distribution of ring structures on the Moon is discussed. A history of the problem of the distribution of the number of craters as a function of their diameter is given. Data obtained from the Luna-9 and Ranger-7 spectrometers are described.

SOME GENERAL FEATURES OF THE DEVELOPMENT OF STRUCTURE
ON THE MOON AND DETAILS OF ITS GEOLOGICAL HISTORY.

M. S. Mironov
A. L. Subbotin

ABSTRACT. The processes leading to the formation
of various lunar features are identified. The authors
present a discussion of the development of the large
crater features (continents and seas) on the Moon.

GEOLOGICAL COMPARISON OF THE MOON AND EARTH

V. G. Tikhonov
P. V. Florenskiy

ABSTRACT. The geological processes leading to the
layering on the Moon are discussed and compared with
processes on the Earth. Research conducted by various
Russian and American scientists on volcanic activity is
described.

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USSR

UDC 616.988.75-036.22-084.484:546.215

FEDYAYEV, B. P., FLORENKOVA, K. M., SIDENKO, V. V., and STEPANOVA, Z. I.

"Viricidal Action of Hydrogen Peroxide Aerosols in Disinfecting the Air in an Influenza Focus"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972, pp 137-142

Abstract: Hydrogen aerosols were sprayed at the rate of 0.020 to 0.31 g/m³ in a children's institution during an epidemic of A₂ influenza (Hong Kong-68 strain). Virus was isolated from 12 of 27 air samples obtained before the spraying, but it was not found in any of 24 samples obtained 40 minutes to 3 hours afterward. None of the children brought into the sprayed areas 30 to 40 minutes after disinfection experienced any side effects, but the personnel who did the spraying suffered mild irritation of the eyes and upper respiratory tract while those exposed to larger doses (0.029 to 0.035 g/m³) developed transient nausea, vomiting, headaches, and pronounced irritation of the mucosa.

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USSR

UDC 621.791.75

PROLOV, V. V., FLORINSKAYA, T. YA., ZHMURKIN, YU. A., and POKHVALENSKIY, D. YE., Moscow, Leningrad

"Hydrogen Distribution in the Heat-Affected Zone of an Alpha-Titanium Alloy with Consideration of the Thermal Diffusion Phenomenon"

Moscow, Fizika i Khimiya Obrabotka Materialov, No 4, Jul-Aug 73, pp 134-137

Abstract: The problem of the heterogeneous distribution of hydrogen in the weld joint of an alpha-titanium alloy was examined where the distribution was formed as a result of the phenomenon of thermal diffusion. The reason for the heterogeneity of hydrogen distribution was believed to be the establishment of isosteric pressure gradients due to the temperature relationship of the solubility coefficient k in the metal, which results in pressure drops and a new hydrogen distribution in the weld joint heat-affected zone. Pipe of the alpha-titanium alloy was welded to check the theoretical data with a hydrogen content in the alloy of 0.02% and in the welding rod -- 0.002%. After welding, the hydrogen content was determined and plotted against the distance from the end of the pipe. It was found that there are two sections with an increased content of hydrogen, above that of the initial pipe. The first section is found close to fusion line (2 mm from
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USSR

PROLOV, V. V., et al., Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 73, pp 134-137

the center of the seam) and the second section -- in the heat-affected zone approximately 3 mm from the fusion line. The first section had a hydrogen content of just over 0.02 wt.% while the second section contained almost 0.03 wt.% hydrogen. Thus, the experimental data agree with the calculations and confirm the theoretical conclusions about the effect of thermal diffusion processes on hydrogen distribution in the heat-affected zone. Two figures, seven bibliographic references.

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- 46 -

172 029 UNCLASSIFIED PROCESSING DATE--02 OCT 70
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DISCUSSION WITH 11 REFS. OF THE PROPERTY STRUCTURE RELATIONS OF I, WHERE R AND P PRIME ARE TETRAVALENT AND DIVALENT AROMATIC RINGS RESP. OR CONSIST OF SUCH AROMATIC RINGS SEPD. BY O, S, SO SUB2, OR CH SUB2 BRIDGES. THE IMIDE RING, WHICH INTERRUPTS THE CONJUGATION OF THE POLYMER CHAIN ACTS AS A "HINGE" AND INFLUENCES THE ELASTICITY OF I. THE TEMPS. OF I PHASE TRANSITION POINTS DEPEND NOT ONLY ON THE CHAIN ELASTICITY, BUT ALSO ON THE INTERMOLEC. INTERACTIONS; IN PARTICULAR ON THE BONDING BETWEEN CO GROUPS OF THE IMIDE RINGS.

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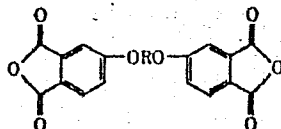
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90000p Synthesis of new dianhydrides of aromatic tetra-carboxylic acids. II. Koton, M. M.; Florinskii, E. S. (Inst. Vysokomol. Soedin., Leningrad, USSR). Zh. Org. Khim. 1970, 6(1), 88-90 (Russ). The condensation of 3,4-Me₂C₆H₃OK with BrRBr [R is 4,4'-C₆H₄C₆H₄ or O(C₆H₄-4)₂] gave R(OC₆H₃Me₂-3,4)₂, which was oxidized with KMnO₄ in alk. soln. to R(OC₆H₃-



(II, R = 4-C₆H₄C₆H₄-4)
(III, R = 4-C₆H₄OC₆H₄-4)

(CO₂H)₂-3,4)₂ (I). Heating I at 250-90°/80 mm gave 4,4'-bis-(3,4-dicarboxyphenoxy)biphenyl dianhydride (II) or 4,4'-bis-(3,4-dicarboxyphenoxy)diphenyl ether dianhydride (III).

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